

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY**

Proceeding by the Department on its own Motion to)	
Implement the Requirements of the Federal)	
Communications Commission's Triennial Review)	D.T.E. 03-60
Order Regarding Switching for Mass Market)	
Customers)	

**SUPPLEMENTAL PANEL TESTIMONY
OF VERIZON MASSACHUSETTS**

(Mass Market Switching, Transport and Loops)

Members of the Panel:

**John Conroy
John White**

December 19, 2003

1 **Introduction**

2 Q. Please state your names and occupations.

3 A. My name is John Conroy, and I am Vice President – Regulatory for Verizon
4 Massachusetts. My name is John White, and I am currently the President of 8
5 Degree Research and Consulting, Inc., located in North Salem, New York. I
6 recently retired from employment with Verizon Communications.

7 Q. Are you the same John Conroy and John White that filed direct testimony in this
8 proceeding?

9 A. Yes, we are.

10 Q. What is the purpose of your supplemental testimony?

11 A. The purpose of our supplemental testimony is to present additional evidence
12 demonstrating that under the standards set forth in the Federal Communications
13 Commission’s (“FCC”) Triennial Review Order, Verizon MA is not required to
14 unbundle mass market switching in the identified markets, dedicated transport for
15 the specific routes, or high capacity loops at the customer locations described in
16 this testimony. The additional evidence takes into account the information
17 received from the CLECs that responded to the Department’s information
18 requests dated October 9, 2003.

19 Q. What are the results of your review of the CLECs’ information responses?

20 A. For mass market switching, the data provided by the CLECs confirm that they are
21 using their own switches to provide voice grade service that meets the FCC’s non-
22 impairment triggers in all of the markets we identified in our initial testimony:

1 Density Zones 1, 2 and 3 in the Boston-Cambridge-Quincy MSA; Density Zone 3
2 in the Providence-New Bedford-Fall River MSA; and Density Zones 2 and 3 in
3 the Springfield and Worcester MSAs. For interoffice transport, the CLEC
4 discovery data confirmed that the FCC's non-impairment triggers have been met
5 by the presence of CLEC transport facilities on 186 routes between Verizon MA
6 wire centers. For high capacity loops, the CLEC data demonstrate that 70
7 buildings meet the FCC's triggers and should therefore be eliminated as locations
8 to which Verizon MA is required to provide unbundled high capacity loops. We
9 describe these results in greater detail below.

10
11 **Mass Market Switching**

12 Q. What additional data did you evaluate with respect to the mass market switching
13 trigger?

14 A. In response to the Department's First Set of Information Requests, several CLECs
15 provided a list of the wire centers where they provide telephone service to mass
16 market customers at the DS0 level of service utilizing their own switching. In
17 addition, those CLECs provided the total number of voice grade equivalent lines
18 provided to customers in each wire center. Verizon MA has reviewed and
19 analyzed this information in an effort to assess how the CLECs' self-reported data
20 compares to the information Verizon MA analyzed and submitted as part of its
21 Initial Direct Testimony. The first step in Verizon MA's analysis was to
22 accumulate each CLEC's response for each wire center that Verizon MA had

1 evaluated in its Initial Direct Testimony. Verizon MA then modified Attachment
2 2 of its Initial Direct Testimony by adding a column representing CLEC counts of
3 mass market DS0s, summarized on a Density Zone and MSA basis. This
4 comparison is shown on Attachment 1, Part 1, attached to this Supplemental
5 Testimony.

6 Q. Did all of the CLECs provide the information requested in the Department's
7 information requests?

8 A. No. For example, AT&T's responses to the Department's information requests
9 did not specify the wire centers or provide the line counts where it provides local
10 circuit switching to mass market customers. As a result, with respect to AT&T,
11 Verizon MA continues to rely solely on the evidence it produced in the Line
12 Count Study filed with our Initial Direct Testimony which identifies where AT&T
13 is providing local circuit switching on a DS0 basis. In addition, some carriers did
14 not answer the Department's questions or the answers were unspecific. In those
15 cases, Verizon MA has not included the data in Attachment 1.

16 Q. What were the results of your analysis?

17 A. As demonstrated in Attachment 1, the CLEC responses confirm that the study
18 results produced in our Initial Direct Testimony are consistent with CLEC data.
19 Moreover, Attachment 1 shows that there are additional CLECs providing service
20 to mass market customers using their own switches that were not included in our
21 Initial Direct Testimony. CLECs that are included in Attachment 1 based solely
22 on their responses to the Department's information requests are highlighted in

1 bold-faced print. Regardless of whether the data is reviewed using only the
2 Verizon MA study results, only the CLEC responses, or a combination of both,
3 the results clearly demonstrate that, as indicated in our Initial Direct Testimony,
4 Verizon MA meets the self-provisioning trigger for mass market switching in
5 Density Zones 1, 2 and 3 in the Boston-Cambridge-Quincy MSA; Density Zone 3
6 in the Providence-New Bedford-Fall River MSA; and Density Zones 2 and 3 in
7 the Springfield and Worcester MSAs.

8 Q. Did you perform any other analysis on the CLEC-provided data on local
9 switching?

10 A. Yes. As noted above, Verizon MA compared the CLEC-provided data with
11 Verizon MA data on a wire center basis as well. That comparison, shown on
12 Attachment 1, Part 2 confirms that the Verizon MA evidence presented in its
13 Initial Direct Testimony accurately reflects the extent to which CLECs are using
14 their own switches to provide local exchange service to mass market customers in
15 Massachusetts. As discussed in our Initial Direct Testimony, although Verizon
16 MA does not believe it is appropriate to evaluate the mass market switching
17 trigger on a wire center basis, the results of the summary of the CLEC responses
18 demonstrates that in each wire center where Verizon MA's data demonstrated
19 there are three or more CLECs serving mass market customers, CLEC data
20 confirms Verizon MA data.

21 Q. Does your analysis of the CLEC provided data change your proposal regarding
22 mass market switching?

1 A. No. The CLECs' data responses confirm that CLECs are actively operating in
2 Massachusetts and Verizon MA's evidence and conclusion that the self-
3 provisioning trigger for mass market switching is satisfied in Density Zones 1, 2
4 and 3 in the Boston-Cambridge-Quincy MSA; Density Zone 3 in the Providence-
5 New Bedford-Fall River MSA; and Density Zones 2 and 3 in the Springfield and
6 Worcester MSAs.

7

8 **Dedicated Interoffice Transport**

9 Q. What additional data did you evaluate with respect to the triggers for dedicated
10 interoffice transport?

11 A. In response to the Department's First Set of Information Requests, many carriers
12 identified multiple Verizon MA wire centers where they have either self-
13 provisioned transport facilities or obtained dedicated transport facilities from a
14 provider other than Verizon MA. Carriers also identified in their responses
15 whether they offer transport facilities on a wholesale basis to other carriers.
16 Verizon MA reviewed the data provided by the CLECs and compared that data to
17 the evidence presented in our direct testimony.¹

18 Q. What supplemental evidence does Verizon MA have for the analysis of dedicated
19 interoffice transport?

¹ Verizon MA notes that not all carriers have responded to all of the Department's information requests. Moreover, Verizon MA has identified numerous problems and inadequacies with certain responses of a number of carriers. The absence of full and complete responses to the Department's information requests may well result in an undercount of transport facilities under the self-provisioning carrier or wholesale provider triggers.

1 A. Verizon MA's initial transport triggers case presented evidence showing that three
2 or more self-provisioning carriers, or two or more wholesale transport providers,
3 have installed transport facilities that directly or indirectly connect 194 pairs of
4 Verizon MA wire centers. Verizon MA's initial conclusion that 194 interoffice
5 routes meet one or both of the FCC's triggers for DS1, DS3 and dark fiber
6 transport was based on its own information about which carriers have operational,
7 fiber-based collocation, or on industry knowledge or other information that is
8 publicly available. This is described in detail in Verizon MA's Initial Direct
9 Testimony. Verizon MA now has incorporated into its dedicated transport
10 triggers analysis information provided by CLECs in response to the Department's
11 First Set of Information Requests. In response to request DTE 1-1, for instance,
12 numerous carriers provided listings of Verizon MA wire centers at which they
13 have deployed transport facilities that directly or indirectly provide connections to
14 other Verizon MA wire centers. Additionally, in response to request DTE 1-2,
15 carriers listed Verizon MA wire centers at which they have obtained, from a
16 carrier other than Verizon MA, transport facilities that directly or indirectly
17 provide connections to other Verizon MA wire centers and identified the
18 underlying wholesale transport provider(s). In response to the Department's
19 information requests, carriers that have self-provisioned transport facilities into a
20 Verizon MA wire center also indicated whether they offer those dedicated

1 transport facilities (connecting Verizon MA wire centers) to competing carriers on
2 a wholesale basis.²

3 Q. Do the competing carriers' responses to the Department's information requests
4 provide additional information on the routes that carriers offer at wholesale?

5 A. Yes. Request DTE 1-4 required carriers to identify whether they provide
6 dedicated transport to other carriers and, if so, to state the capacity of each facility
7 that connects to a Verizon MA wire center. Verizon MA's supplemental analysis
8 reflects this new information. With the exception of one carrier, if a carrier
9 responded to DTE 1-4 that it does not offer dedicated transport services in
10 Massachusetts to other carriers on a wholesale basis, Verizon MA did not identify
11 that carrier as a wholesale provider of transport services for purposes of its
12 analysis. Verizon MA did not change the wholesale designation of one carrier,
13 however, because although that carrier claimed not to offer wholesale transport
14 facilities, other carriers indicated that they were, in fact, obtaining transport
15 facilities or services on a wholesale basis from that carrier. Thus, Verizon MA
16 reasonably concluded that this carrier is both a wholesale provider and a self-
17 provisioning competing carrier since reliable third-party evidence supporting this
18 conclusion was presented to the Department.

² Certain providers identified by Verizon MA herein as wholesale transport providers did not respond to the Department's Subpoena Duces Tecum. These companies include NEESCom and NEON Communications. Accordingly, Verizon MA relied on other internal information or on publicly available data to determine whether these carriers provide wholesale transport facilities.

1 Q. How did Verizon MA identify the capacities at which the wholesale providers
2 offer dedicated transport?

3 A. Verizon MA relied on carriers' responses to requests DTE 1-3 and 1-4 (where
4 available) to determine on a route-by-route basis, the level of capacity a
5 competing carrier has obtained from a provider other than Verizon MA and/or the
6 type and capacity of transport facilities offered to other carriers on a wholesale
7 basis. If a carrier did not provide a response to the Department's information
8 requests or did not provide a full or complete answer that would enable Verizon
9 MA to determine the type and/or capacity of facilities, Verizon MA made
10 reasonable assumptions for each provider. For instance, Verizon MA assumes
11 that most carriers build fiber transport networks with sufficient capacity to meet
12 future transport and connectivity requirements. NEON, for example, states on its
13 website that its network is built with available capacity at all bandwidth levels
14 from DS3s to OC48s. Additionally, many transport providers offer dark fiber
15 facilities as an alternative to their managed transport services. Therefore, unless
16 Verizon MA has evidence that a particular carrier does not offer a particular
17 capacity level, Verizon MA assumed all wholesale providers make transport
18 available at each capacity level (DS1, DS3 and dark fiber). This is consistent with
19 our Initial Direct Testimony that demonstrated that the capacity of fiber is almost
20 entirely a function of the electronics and can be operated at DS1, DS3, OC48 or
21 higher. In contrast, Fibertech Networks and NEESCom declare in their website
22 materials that they offer dark fiber only and typically leave it to their customers to

1 light the fiber by installing multiplexing equipment. In its supplemental analysis,
2 therefore, Verizon MA treats Fibertech and NEESCom as providers of only dark
3 fiber transport facilities (and not of DS1 and DS3 facilities). Absent similar
4 specific evidence that the carriers identified in Attachments 3.C and 3.F refuse to
5 sell DS1 and DS3 services, and dark fiber, on a particular route, the Department
6 should find that these providers will sell DS1 and DS3 transport as well as dark
7 fiber facilities on their routes.

8 Q. What are the results of Verizon MA's analysis of this additional evidence?

9 A. After incorporating the responses to the Department's discovery and making the
10 adjustments described above, Verizon MA's evidence demonstrates that there are
11 186 direct routes that meet one or both of the FCC's two objective triggers for
12 dark fiber transport (two in LATA 126, and 184 in LATA 128). Verizon MA's
13 evidence further shows 185 direct routes – all of which are in LATA 128 – meet
14 one or both of the FCC's triggers for DS3 dedicated transport. Verizon MA's
15 evidence also shows that there are 174 direct routes, all in LATA 128, meeting the
16 FCC's wholesale trigger. Only the wholesale trigger applies to DS1 capacity
17 transport. Attachment 2 includes maps that show, by LATA, each of these routes.

18 Q. Please describe the evidence of transport routes in Massachusetts meeting the
19 self-provisioning trigger for dark fiber.

20 A. The evidence shows that there are 182 routes between pairs of Verizon wire centers
21 in Massachusetts meeting the FCC's self-provisioning trigger for dark fiber. Two
22 (2) routes meet the trigger in LATA 126 and 180 routes meet the trigger in LATA

1 128. Each pair has (at least) the same three unaffiliated competing carriers with
2 operational, fiber-based collocation facilities. The evidence showing that these
3 routes meet the trigger is presented in Attachments 3.A and 3.B, which identify the
4 relevant pair of wire centers for each route by LATA.³

5 Q. Please describe Verizon MA's evidence of transport routes meeting the FCC's
6 wholesale trigger for dark fiber.

7 A. In Massachusetts, 57 pairs of Verizon MA wire centers meet the FCC's wholesale
8 trigger for dark fiber. All of these routes are found in LATA 128. Each pair of wire
9 centers has (at least) the same two or more carriers that offer dark fiber facilities to
10 other carriers. Verizon MA's evidence that these transport routes meet the FCC's
11 wholesale trigger for dark fiber is shown by Verizon MA wire center and wholesale
12 provider in Attachment 3.C.

13 Q. Please describe the number of routes that satisfy either the self provisioning trigger
14 or the wholesale trigger for dark fiber.

15 A. Attachment 3.D lists the 186 routes (or pairs of wire centers) that satisfy either the
16 self-provisioning trigger for dark fiber or the wholesale trigger for dark fiber. The
17 total number of routes that satisfy either trigger is smaller than the sum of the routes
18 that meet the self-provisioning trigger (182) and the routes that meet the wholesale
19 trigger (57) because there is substantial overlap in the two sets of routes, *i.e.* many

³ The proprietary versions of Attachments 3 A, B, C, E and F also identify the particular CLECs. These proprietary attachments are being filed with the Department and served on those parties that have signed the Protective Agreement in this proceeding. CLEC names are removed from the public versions of these Attachments.

1 routes satisfy both triggers.

2 Q. Please describe the evidence of transport routes in Massachusetts meeting the
3 self-provisioning test for DS3 dedicated transport.

4 A. There are 145 routes between pairs of Verizon MA wire centers in Massachusetts
5 meeting the FCC's self-provisioning trigger for DS3 dedicated transport. Each pair
6 has (at least) the same three unaffiliated competing carriers with operational, fiber-
7 based collocation facilities. The evidence showing that these routes meet the trigger
8 is presented in Attachment 3.E, which shows the relevant routes by the wire centers
9 they connect.

10 Q. Please describe Verizon MA's evidence of transport routes meeting the FCC's
11 wholesale trigger for DS3 and DS1 dedicated transport.

12 A. In Massachusetts, 174 pairs of Verizon MA wire centers meet the FCC's
13 wholesale trigger for DS1 and DS3 dedicated transport. Each pair of wire centers
14 has (at least) the same two or more carriers that offer wholesale dedicated
15 transport services to other carriers. The evidence showing that these routes meet
16 the wholesale trigger for DS1 and DS3 transport is shown in Attachment 3.F.

17 Q. Please describe the number of routes that satisfy either the self-provisioning
18 trigger or the wholesale trigger for DS3 dedicated transport?

19 A. Attachment 3.G lists the 185 routes that meet either the self-provisioning trigger for
20 DS3 dedicated transport or the wholesale trigger for DS1 and DS3 dedicated
21 transport in Massachusetts. Again, the total number of routes that satisfy either
22 trigger is smaller than the sum of the routes that meet the self-provisioning trigger

1 and the wholesale trigger because many of the routes meet both of the triggers.

2

3 **High Capacity Loops**

4 Q. What evidence does Verizon MA have for the analysis of high capacity loop
5 facilities?

6 A. In our November 14, 2003 Initial Direct Testimony, we indicated that Verizon MA
7 was unable to identify customer locations meeting the hi-cap loop triggers because
8 information on CLEC loop deployment was in the hands of the CLECs and Verizon
9 MA was not able to take carriers' responses to the Department's First Set of
10 Information Requests into account due to the timing of the carriers' responses.
11 Since that time, Verizon MA has reviewed responses to the Department's hi-cap
12 loop information requests. Verizon MA can now identify customer locations in
13 Massachusetts that satisfy the hi-cap loop triggers.

14 Q. Please describe the FCC's objective triggers for identifying the customer locations
15 for which competing carriers are not impaired without access to Verizon MA's hi-
16 cap loop facilities.

17 A. In its *Triennial Review Order*, the FCC found that requesting carriers are impaired
18 on a nationwide basis without access to unbundled dark fiber, DS1, and DS3 hi-cap
19 loop facilities serving the enterprise market. *Triennial Review Order* ¶¶ 311-14,
20 320-27. The FCC recognized, however, that competing carriers often self-provision
21 hi-cap facilities or obtain them on a wholesale basis from carriers other than the
22 ILEC. *Id.* ¶¶ 328-39. Consequently, the FCC authorized the state commissions to

1 determine the specific customer locations that meet one of two objective triggers —
2 which show that CLECs are already providing non-ILEC hi-cap facilities, either to
3 themselves (self-provisioning trigger) or to other carriers (wholesale trigger). If a
4 state commission finds that either trigger is met for a specific loop capacity at a
5 specific customer location, the state commission must make a finding of non-
6 impairment, and the ILEC will no longer be required to unbundle that loop capacity
7 to that customer location. *Triennial Review Order* ¶ 328; *see also* 47 C.F.R.
8 §51.319(a)(4)-(6). In other words, when a customer location meets one of the
9 FCC's triggers, the state commission conducting the customer location-specific
10 review must find that the FCC's national finding of impairment has been overcome
11 for the relevant loop capacity.

12 The first of the FCC triggers looks at whether competing carriers have self-deployed
13 or self-provisioned dark fiber or DS3 capacity loop facilities. Under the self-
14 provisioning trigger for dark fiber, the Department must find no impairment if two
15 or more unaffiliated competing carriers have deployed to a particular customer
16 location their own dark fiber facilities. *Triennial Review Order* ¶¶ 332-334; 47
17 C.F.R. § 51.319(a)(6)(i). Dark Fiber obtained under a long-term indefeasible right
18 of use is considered to be that carrier's own fiber for purpose of applying the self-
19 provisioning trigger. *Triennial Review Order* ¶ 333 n. 981; 47 C.F.R. §
20 51.319(a)(6)(i). Under the self-provisioning trigger for DS3 loop facilities, the
21 Department must find no impairment if two or more unaffiliated competing carriers
22 have (i) deployed to a particular customer location their own dark fiber facilities and

1 are serving customers via those facilities at that location, or (ii) deployed DS3
2 facilities by attaching their own electronics to activate dark fiber facilities obtained
3 under a long-term indefeasible right of use and are serving customers via those
4 facilities at that location. *Triennial Review Order* ¶¶ 332-334; 47 C.F.R. §
5 51.319(a)(5)(i)(A).

6 The second FCC trigger looks at whether DS1 or DS3 loop facilities are available
7 from other carriers on a wholesale basis. Under this test, competing carriers are not
8 impaired without access to Verizon MA's DS1 or DS3 facilities if two or more
9 competing providers (including intermodal providers of service comparable in
10 quality to the ILEC) not affiliated with each other or the ILEC each (i) has deployed
11 its own DS1 or DS3 facilities; (ii) offers a DS1 or DS3 loop over its own facilities on
12 a widely available wholesale basis to other carriers desiring to serve customers at
13 that location; and (iii) has access to the entire customer location (including each
14 individual unit within that location). *Triennial Review Order* ¶ 337; 47 C.F.R. §
15 51.319(a)(4)(ii), 47 C.F.R. § 51.319(a)(5)(i)(B). Dark fiber obtained on an
16 unbundled, leased, or purchased basis from another carrier counts as the buying
17 carrier's own DS1 or DS3 loop facility if that carrier attaches its own electronics and
18 offers the activated fiber at wholesale. *Id.*

19 Q. What is a customer location?

20 A. The FCC distinguishes between "customer locations" and individual units within
21 that location. *See Triennial Review Order* ¶ 337. This distinction indicates that a
22 customer location is a building, not an individual unit or suite in a multi-unit

1 building.

2 Q. The FCC's two triggers apply to different "capacities" of loops. What determines
3 the capacity at which fiber loop facilities operate?

4 A. The capacity of a fiber optic loop is almost exclusively based on the electronic
5 equipment that a carrier attaches to activate or "light" the fiber. *See Triennial*
6 *Review Order* ¶311. As the FCC found in its *Triennial Review Order*, when carriers
7 self-deploy fiber they usually do so at the OCn level. *Id.* ¶ 298. Indeed, the
8 underlying capacity of a strand of dark fiber is comparable in total capacity to an
9 OCn loop, which can operate at a wide range of capacities. *See id.* ¶ 311. Many
10 CLECs that serve customers over their own DS1 loops have previously deployed an
11 OCn level facility that they are using to serve other customers at lower loops
12 capacity levels. *Id.* n. 859. Fiber optic cable is also "channelized"—that is, larger
13 capacity facilities are subdivided into smaller capacity facilities — by attaching the
14 appropriate electronics at both ends of the fiber cable to provide these various
15 capacities. For example, lower capacity DS1 and DS3 facilities are channelized
16 simultaneously within the larger capacity OC12 or OC48 facility. The electronic
17 equipment used to activate these various levels of capacity is widely available.

18 Q. What does it mean to operate a fiber optic loop facility at OCn, DS1, or DS3 levels
19 of capacity?

20 A. As with transport, OCn loops refer to the technical distinction (*i.e.*, Optical Carrier
21 or "OC") and the capacity (*i.e.*, "n") of fiber optic cable. For example, an optical
22 carrier-level 3 — or OC3 capacity circuit contains the equivalent of up to three DS3

1 circuits (an OC3 is approximately 155 Mbps, while three DS3s are 135 Mbps), but
2 terminates on a different type of electronic interface.

3 DS1 and DS3 loops likewise refer to the technical distinction (*i.e.*, Digital Signal or
4 “DS”) and capacity. The elemental speed is a DS0, which is a voice grade line with
5 a bandwidth of 64 Kbps. A DS1 capacity circuit contains the equivalent of 24 voice-
6 grade or DS0 channels. A DS3 capacity circuit contains the equivalent of 28 DS1
7 channels or 672 DS0 channels.

8 Q. The FCC’s loop triggers are separately applied to dark fiber facilities. What is dark
9 fiber?

10 A. Dark fiber is the unused fiber within an existing fiber optic cable that has not yet
11 been activated through electronics to render it capable of carrying communications
12 services. *Triennial Review Order* ¶ 311. Dark fiber has virtually unlimited capacity,
13 and it is the electronics that define the capacity. *Id.* n. 909.

14 Q. Which Department information requests did Verizon MA use to compile data on
15 customer locations satisfying the loop triggers?

16 A. The Department asked three information requests relevant to the loop triggers:
17 DTE 1-11, 1-12 and 1-13.

18 Q. Did all of the CLECs provide the information requested in the Department’s
19 information requests?

20 A. No. For example, three competing carriers did not identify the capacity of the loops
21 identified in response to Department information request DTE 1-11. In these
22 instances, Verizon MA assumed (and the Department should find) that these carriers

1 have provisioned dark fiber, DS1, and DS3 loops unless they present evidence to the
2 contrary. Similarly, one carrier did not identify whether any of its deployed loops
3 are provided to itself or on a wholesale basis as requested in Department request
4 DTE 1-12. However, for the reasons outlined in more detail below, Verizon MA
5 assumed, and the Department should find, that the carrier offers these loops on a
6 wholesale basis unless it presents evidence that it does not.

7 Q. Please describe Verizon MA's evidence of customer locations in Massachusetts that
8 meet the FCC's hi-cap loop triggers.

9 A. Verizon MA has evidence that 70 customer locations meet either of the FCC's
10 triggers. There are 15 customer locations that meet the DS1 wholesale trigger. With
11 respect to DS3 loops, 67 customer locations meet the self-provisioning trigger, and
12 12 meet the wholesale trigger. Finally, there are 17 customer locations meeting the
13 dark fiber self-provisioning trigger. The total number of locations that satisfy either
14 trigger is smaller than the sum of the locations that meet the self provisioning trigger
15 and the wholesale trigger because there is overlap in the two sets of locations, i.e.
16 some satisfy both triggers. Attachment 4 identifies each customer location meeting
17 the triggers. The proprietary version of this attachment identifies the CLECs with
18 loop facilities at each customer location. CLEC names are removed from the public
19 versions of Attachment 4.

20 Q. Can any fiber loop facility deployed by a CLEC be used to provide a DS1 or DS3
21 loop?

22 A. Yes. In identifying the customer locations meeting the FCC's triggers, Verizon MA

1 made the reasonable assumption that when competing carriers deploy fiber and
2 attach OCn electronics (*e.g.*, OC48 multiplexers), they then subdivide — *i.e.*,
3 channelize — the OCn system into the lower transport levels required by their
4 customers, including DS3s or DS1s. This is consistent with the FCC’s finding
5 (discussed above) that many CLECs that serve customers over their own DS1 loops
6 have previously deployed an OCn level facility that they are using to serve other
7 customers at lower loop capacity levels. *Id.* n. 859.

8 While fiber loop facilities are capable of operating at various levels of capacity, the
9 capacity of the fiber is almost entirely a function of the electronics that a carrier
10 attaches, not something inherent in the fiber itself. Once the fiber is deployed, it is
11 operated at a DS1, DS3, OC48 or higher level — or at all of these levels
12 simultaneously — simply by changing the electronics. The electronics used to
13 channelize the OCn system to DS1 and DS3 transport levels are commonly
14 available.

15 Verizon MA’s assumption that competing carriers who deploy fiber optics generally
16 build OCn level transport facilities, capable of channelization to DS1 or DS3, is
17 consistent with standard industry practice. Few if any carriers deploy fiber loop
18 facilities to accommodate only a DS1 or only a DS3. To the contrary, as the FCC
19 found in its *Triennial Review Order*, carriers deploying fiber predominantly do so at
20 the OCn level. *Triennial Review Order* ¶ 289. For example, in response to
21 Department request DTE 1-11, one competing carrier stated that it deploys loops at
22 the OC48 capacity. Verizon MA generally deploys loops at OC3 or OC12 capacity.

1 These OCn facilities are then subdivided or channelized to a DS1 or DS3 level
2 because these are the levels at which service is typically requested by end user
3 customers.

4 The assumptions underlying Verizon MA's self-deployment trigger case are entirely
5 consistent with the way fiber loop facilities commonly are constructed and operated.

6 The Department therefore should find that CLECs who have deployed fiber optic
7 loop facilities have provisioned DS1 and DS3 circuits — unless a carrier shows, for
8 a particular customer location, that it does not have any DS1 or DS3 circuits.

9 Q. Do these fiber loop facilities also contain dark fiber?

10 A. Absent evidence to the contrary, it reasonably can be assumed that all self-
11 provisioned fiber loop facilities have dark fiber. Since dark fiber is simply fiber
12 optic cable “that has not been activated through connections to electronics that light
13 it, and thereby render it capable of carrying communications,” (*Triennial Review*
14 *Order* ¶ 311), all fiber loop facilities, regardless of the capacities at which they now
15 operate, once consisted entirely of dark fiber. Put differently, evidence of “lit” fiber
16 is also evidence that a carrier has self-provisioned dark fiber.

17 Additionally, as a matter of standard industry network engineering design and sound
18 economics, the vast majority of self-provisioned fiber loop facilities will have spare
19 dark fibers. As the FCC recognized, dark fiber exists in a carrier's network as unused
20 fiber available because that carrier has deployed fiber in the first instance for the
21 express purpose of lighting certain strands of it to serve a particular customer
22 location. *Triennial Review Order* ¶ 312. The FCC explained,

1 When a fiber build decision is made, carriers take
2 advantage of the fact that they are already incurring
3 substantial fixed costs to obtain the rights-of-way, dig up
4 streets, and trench cable, to lay more fiber than they
5 immediately need. Once the significant fiber construction
6 cost is incurred, the record reflects that it is relatively easy
7 and inexpensive to install fiber strands in excess of current
8 demand at that time to maximize the use of conduit and
9 avoid the need to incur duplicate costs to retrench the same
10 location in the future if demand for additional fiber
11 facilities occurs.

12 *Id.*

13 Thus, fiber facilities are always installed with extra fiber to meet projected demand
14 growth. Furthermore, fiber cables are commonly manufactured and deployed in
15 increments of 12 fiber strands (*i.e.*, 12, 24, 48, etc., fibers per cable). Verizon MA
16 therefore assumed (and the Department should find) that CLECs who have deployed
17 fiber optic loop facilities also have dark fiber deployed at that location— unless a
18 carrier shows, for a particular customer location, that it does not have any dark fiber
19 at that location.

20 Q. How did Verizon MA identify carriers offering loop facilities on a wholesale basis,
21 and the capacities at which those facilities are offered?

22 A. Verizon MA primarily relied on carriers to self-identify themselves as wholesale
23 providers in response to the Department’s loop information requests. Where CLECs
24 failed to provide responses to Department request DTE 1-11, Verizon MA assumed
25 that these carriers are wholesale providers unless they provide information indicating
26 that they are not. Similarly, some carriers state that loops at some customer
27 locations are provided to other carriers at wholesale, but not others. If a carrier is

1 willing to offer loops at some customer locations, the Department should assume
2 that it is willing to do so at all customer locations—unless a carrier indicates that it is
3 not. Verizon MA was also able to find some evidence of CLEC wholesale providers
4 to supplement responses to the Department information requests. As with its
5 transport evidence, Verizon MA identified carriers that hold themselves out as
6 wholesale providers on their websites.⁴ If a carrier holds itself out as a wholesale
7 provider on its website — and does not limit its representation to particular locations
8 or to exclude loops —Verizon MA identified the carrier as a wholesale provider.
9 Finally, Verizon MA assumes that a carrier that has deployed fiber loop facilities
10 and is willing to provide those facilities to other carriers is providing (or is willing to
11 provide) various levels of capacity at wholesale, including dark fiber, DS1, and DS3.
12 Therefore, unless there is specific evidence that a carrier refused to sell other carriers
13 specific capacities and dark fiber on a particular transport route, the Department
14 should find that a wholesale provider will sell DS1 and DS3 transport over its fiber
15 facilities, as well as dark fiber.
16 Based on the discovery responses and information on carrier websites, Verizon MA
17 has identified five competing carriers who offer loop facilities on a wholesale basis.
18 Again, unless competing carriers provide particularized, location-specific evidence,
19 the Department should rely on Verizon MA’s evidence of a carrier’s general

⁴ For example, RCN’s Chief Strategy Officer indicates on its website that it is “seeking opportunities to wholesale the excess capacity of RCN’s fiber-optic Megaband Network, improving the company’s product offerings and adding to its bundles.”
(www.mci.com/telecom_wholesale/index.jsp)

1 willingness to offer its loop facilities on a wholesale basis and treat all such carriers'
2 loop facilities as available for leasing at wholesale.

3 Q. Did competing carriers provide information regarding whether they have access to
4 an entire customer location?

5 A. No. Competing carriers did not specifically state whether they have access to the
6 entire building to which they have deployed loop facilities. However, it is
7 reasonable to assume that a competing carrier does have access to the entire location
8 unless that carrier presents evidence to the contrary.

9 Q. Did the competing carriers provide information regarding whether they serve end
10 user customers over DS3 facilities they have deployed?

11 A. No. Competing carriers did not specifically state whether they serve end-user
12 customers over the DS3 facilities that they have deployed. However, discounting
13 the locations specifically identified as providing dark fiber only, or being
14 provided to other carriers at wholesale, it is reasonable to assume that a competing
15 carrier is serving end-user customers at the locations identified in response to
16 Department request DTE 1-11. In such cases where a carrier has connected high
17 capacity (OCn, DS3, DS1) transport facilities, through multiplexing equipment, to
18 a switch, it is reasonable to assume that voice-grade equivalent (*i.e.*, DS0) traffic
19 is being carried within the channels of the high capacity transport. Operationally,
20 in the circuit-switched network, there is no other valid reason to connect such
21 transport to a switch. Finally, Verizon MA also assumed that competing carriers

1 are not serving customers in building that house Verizon MA central offices and

2 excluded those buildings from its high capacity loop trigger analysis.

3 Q. Does this conclude your testimony?

4 A. Yes, it does.